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Interpretation of DHI Information

Accurate and timely information is essential for making management decisions on a modern dairy farm.

By supplying complete and accurate input data through DHI each month, the producer will receive a wide range of information from which decisions can be made. The input data required includes such things as: individual cow production, breeding dates, calving dates and, of course, cow identification.

Understanding how to interpret the resulting output data will ensure appropriate management decisions are made.

Dairy production

Test day production levels of milk, fat and protein are reported in the cow production monthly report. Accumulating lactation totals are also produced in the same report. Based on this information, a Breed Class Average (BCA) and the deviation from herd average is established for each individual cow. BCA's and deviations are available for milk, fat and protein.

A BCA is a production index used to fairly evaluate the performance of an individual cow. The BCA is adjusted for the breed of animal, age at calving and the season of the year. Estimated BCA's will be shown once a cow has reached 45 days in milk.

The base BCA is 100. An individual cow can have a BCA either above or below the base depending on its level of production. The average BCA for a cow in Alberta is approximately 140.

The performance of a cow, relative to herdmates, can be measured by using deviations. The deviation is the difference between the cow's BCA and the current herd average BCA. The deviation is expressed as a positive or negative difference from the herd average.

Deviations are the most reliable way of evaluating individual cow performance. A producer should never purchase an animal with a negative deviation.

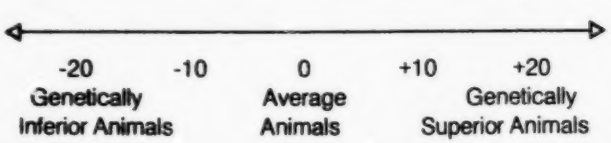

Figure 1. Relative comparison of animals according to their deviation from herd BCA

Rolling herd average

The rolling herd average represents the average production of all cows credited with a 305 day record over the past 12 months. Both production levels and BCA's are displayed in the top left corner of the monthly herd summary report.

Previous 12 month production

The previous 12 month production calculation is in the monthly herd summary report. It gives the average production per cow for all cows in the herd over the past 12 months. The number of cow years is established by calculating the total days each and every cow was milking and dividing the sum by 365. The production level given here will be the closest approximation to the actual amount of milk produced.

Reproduction

The calving interval is the most widely used measure of herd reproductive performance. Research has shown maximum production and profitability occur when the calving interval is 12.5 months.

To achieve a calving interval of 12.5 months, animals must be in calf by 100 days in milk. All breeding dates must be reported for calving interval information to be accurate. To have animals safe in calf by 100 days, it is recommended that they be bred at the first heat following 45 days in milk. The days open for each animal is reported in the cow production monthly report.

The monthly herd summary provides an average calving interval and average days open for the previous 12 month period. This is useful for evaluating reproductive programs.

To assess current reproductive management practices, a projected calving interval is also provided in the stage of lactation profile. This prediction of reproductive performance will help producers quickly identify problems. An upward trend in the projected calving interval should trigger a review of reproductive management including: heat detection, semen handling and insemination techniques. It may also be useful to review the feeding program.

Copies of this and related publications may be obtained from the Print Media Branch, Alberta Agriculture, 7000 - 113 Street, Edmonton T6H 5T6 or Alberta Agriculture's District Offices.

Feeding

Feeding program decisions should be based on feed analysis results and advisory services. The production data located in the "Stage of Lactation Profile" section of the monthly herd summary report is particularly useful for evaluating the response of the herd to feeding changes. Since it is the most current production information available, it is useful in monitoring peak production levels and lactation persistency.

Individual cow data from the cow production monthly report can be used when feeding is done on an individual cow basis. One example would be where computerized feeding is used.

Stage of lactation

The state of lactation, or average days in milk, is found in the test day summary section of the monthly herd summary report. If cows are entering and leaving the herd on a continual basis, the average days in milk should be between 150 and 160 days. If there is a significant deviation from this level there may be cause for concern. If the days are low, (e.g. 125 days) this indicates that a majority of the cows are in early lactation and the herd production is higher. Production will drop as these cows move through their lactation. In cases where the average days in milk is high (e.g. 175) the herd production can be expected to be lower. The herd production level will increase as these cows begin new lactations. Estimates of future quota utilization can be made by considering production trends as they relate to average days in milk.

Choosing replacements

Heifers are the future of any dairy operation. DHI provides the information from which replacement animals can be chosen. The best candidates for herd replacements can be chosen by monitoring all heifers as they go through their first lactation.

The monitoring of lifetime production records strongly suggests that first lactation results are an excellent indication of an animal's production potential.

The "Test Day Summary" section of the monthly herd summary report allows easy monitoring of the selection program. The first lactation animals can be compared to second lactation and later lactation animals. If the breeding, selection and rearing programs are working, the heifers should have higher BCA's because of genetic improvement.

Culling

Individual cow data from the cow production monthly report provides the opportunity for fair assessment of a cow's production ability. If she is not producing to a set standard then she is a culling candidate. The easiest way to select culling candidates is to establish a deviation level below which performance is considered unacceptable. An example might be a deviation of -20. All animals below -20 can be highlighted on the report. The final decision to cull must be based on the health and age of the animal, replacements available, pedigree and past performance, as well as milk production. Once the decision has been made to cull, the cow should be sold prior to 240 days in milk. This prevents a poor record from being included in the rolling herd average.

Management memos

An option currently available to all producers is management memos. These very useful listings are provided each month with the other reports. Each report lists animals that should be monitored for a variety of reasons. Current listings include:

- culling candidates
- cows to calve
- cows to dry
- cows to breed
- cows to pregnancy check
- large changes in projected BCA
- inverted fat/protein

Management memos save the producer time by automatically identifying the cows to watch. The memos are generated from the breeding and production information recorded on the Barn Sheets.

Herd analysis

Groupings of information can also be used to analyze herd performance and evaluate management decisions. For example, high producing cows are an important group. In many ways the job done with this group will ultimately affect the success of the dairy operation.

Table 1.

Barn Name or Number	Deviation (for milk)	Lactation Number	Days Open
Bobby	+48	7	57
Elta Ned	+15	7	121
Fairy	+13	2	101
Jackie	+19	2	79
Midge	+15	1	109
Mitzi	+25	3	82
Flower	+36	6	104
Mary	+51	51	42

A dairy herd with similar lactation numbers and days open to those of the cows in table 1 should be of concern to a dairy producer.

(1) Most of the cows in table 1 are in their second or later lactation. In Alberta the average number of lactations a cow stays in the herd is approximately three.

A grouping of the top producing cows should show that the performance of the heifers have improved over the previous generation. Therefore, they should make up a majority of the cows in this group. This is the basis of any breeding program.

In this example, most of the best cows are nearing the end of their productive life. Production levels and BCA's are likely to decrease if there are no good heifers to replace them.

A review of the breeding and the heifer raising programs would be recommended in this case. It may also be useful to list heifers alone, under the headings in table 1, to see how they are doing as a group.

(2) Most of the animals in table 1 have been open for more than 100 days. The key to success for the commercial dairyman is to get these animals bred back as soon as possible. The first part of a cow's lactation is the most profitable and the faster she can return to this stage the better. Long delays in getting the cow back in calf reduces her lifetime production and consequently financial returns for the dairy farmer.

It is generally recommended cows be bred on the first heat that comes at least 45 days after calving. With a reasonable conception rate, this will allow for a days-open below 100 days.

If the days-open rises to the 100-day level a review of the heat detection, feed and breeding practices is normally recommended. This group has special needs and failure to recognize these needs could lead to serious problems.

Veterinarians, nutritionists and other extension personnel that visit your herd on a regular basis can use DHI information to pinpoint problems. Accurate identification of a problem will lead to a quick solution.

For more information on DHI and its uses contact your local DHI Technician, Regional Dairy Production Specialist or District Agriculturist.

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